

03050103-010**(Catawba River)****General Description**

Watershed 03050103-010 is located in York, Lancaster, and Chester Counties and consists primarily of the **Catawba River** and its tributaries through to the Cedar Creek Dam. The watershed occupies 105,390 acres of the Piedmont region of South Carolina. The predominant soil types consist of an association of the Cecil-Wilkes-Herndon-Helena-Georgeville series. The erodibility of the soil (K) averages 0.28, and the slope of the terrain averages 10%, with a range of 2-25%. Land use/land cover in the watershed includes: 74.3% forested land, 11.3% urban land, 6.5% water, 5.6% agricultural land, 1.8% scrub/shrub land, and 0.5% barren land.

The Catawba River flows through the Catawba Dam near the Town of Fort Mill, and is joined by Johnnytown Branch, Big Dutchman Creek (Little Dutchman Creek), Hidden Creek, Dye Branch (Jones Branch), Manchester Creek, and Burgis Creek (all originating near the City of Rock Hill) before accepting drainage from the Sugar Creek watershed. Downstream from the Sugar Creek drainage, the Catawba River flows past the Catawba Indian Reservation and is joined by Haggins Branch, Sixmile Creek (Barber Creek), Ferry Branch, Abernathy Creek, Greene Creek, and the Twelvemile Creek watershed. The Landsford Canal connects the bend in the river where Twelvemile Creek enters. Further downstream, the river accepts the drainage of Rock Water Spring Branch, Dunn Creek, and the Cane Creek watershed near the Town of Fort Lawn. The Catawba River then flows into Fishing Creek Reservoir, which is impounded by the Fishing Creek Dam. Bear Creek forms an arm of the reservoir.

The Catawba River is dammed again just downstream of the Fishing Creek Dam and the flow diverted to form Great Falls Reservoir. The retention time for Great Falls Reservoir is approximately one day, and essentially functions as an expanded area of the diverted Catawba River. The Fishing Creek watershed drains into Great Falls Reservoir just below the Fishing Creek Dam. Great Falls Reservoir is impounded by the Dearborn Dam, and together with the Cedar Creek Dam downstream serve to back the water up into the true Catawba River bed to form Cedar Creek Reservoir. The section of the Catawba River upstream of Cedar Creek Reservoir and downstream of the Catawba River Diversion Dam is dry and serves as an emergency spillway. Great Falls Reservoir also has a dam between it and this dry section used for periods of flood. The Camp Creek watershed drains into this section and forms a ponded area.

The Rocky Creek watershed drains into the section of Cedar Creek Reservoir between the Dearborn Dam and the Cedar Creek Dam. Debutary Creek drains into and forms an arm of Cedar Creek Reservoir just above the Cedar Creek Dam. Duke Power Company oversees the operation of these reservoirs, and they are used for power generation as well as recreation. Fishing Creek Reservoir is also used for water supply. There are a total of 231.9 stream miles and 4,049.1 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

<u>Station #</u>	<u>Type</u>	<u>Class</u>	<u>Description</u>
CW-221	S/W	FW	HIDDEN CREEK AT HWY. 161, 0.4 MI W OF I-77
CW-014	P/SPRP	FW	CATAWBA RIVER AT US 21

CW-041	PSRP	FW	CATAWBA RIVER AT SC 5 ABOVE BOWATER
CW-016	P/INT	FW	CATAWBA RIVER AT SC 9 AT FORT LAWN
CW-016F	P/W	FW	FISHING CREEK RESERVOIR 2 MI BELOW CANE CREEK
RL-01012	RL01	FW	FISHING CREEK RES., 3.8 MI S OF FT. LAWN OFF W SHORE OF LAKE VIEW
CW-057	P/INT	FW	FISHING CREEK RESERVOIR 75 FT ABOVE DAM NEAR GREAT FALLS
CW-174	S/W	FW	CEDAR CREEK RES. AT UNIMPROVED RD ABOVE JUNCTION WITH ROCKY CREEK
RL-02319	RL02	FW	CEDAR CREEK RESERVOIR, W OF BIG ISLAND 7MI BELOW ROCKY CK CONFLUENCE
RL-01007	RL01	FW	CEDAR CREEK RESERVOIR, 2.15 MI SE OF GREAT FALLS
RL-02452	RL02	FW	CEDAR CREEK RESERVOIR, 0.15 MI SE OF S TIP OF PICKETT ISLAND
RL-01017	RL01	FW	CEDAR CREEK RESERVOIR, 2.5 MI SE OF GREAT FALLS
CW-033	W	FW	CEDAR CREEK RESERVOIR 100 M N OF DAM

Hidden Creek (CW-221) – Aquatic life uses are fully supported; however, there are significant increasing trends in five-day biochemical oxygen demand, turbidity, and total phosphorus concentration. There is a significant decreasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Catawba River – There are three SCDHEC monitoring sites along the Catawba River. There are significant decreasing trends in pH at all sites. Aquatic life uses are fully supported at the furthest upstream site (**CW-014**), and significant decreasing trends in turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Further downstream (**CW-041**), aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion. There is also a significant increasing trend in turbidity. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site.

Aquatic life uses are fully supported at the furthest downstream site (**CW-016**); however, there is a significant increasing trend in total phosphorus concentration. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site. *Fish tissue samples from the Catawba River indicate no advisories are needed at this time.*

Fishing Creek Reservoir – There are three SCDHEC monitoring sites along Fishing Creek Reservoir. Aquatic life uses are not supported at the furthest uplake site (**CW-016F**) due to turbidity and total phosphorus concentration excursions. This is compounded by significant increasing trends in turbidity and total phosphorus concentration. There is also a significant increasing trend in total nitrogen concentration. There is a significant decreasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported at this site. Further downstream (**RL-01012**), aquatic life uses are not supported due to chlorophyll-*a* excursions. Recreational uses are fully supported at this site.

Aquatic life uses are not supported at the furthest downlake site (**CW-057**) due to total phosphorus excursions. There is also a significant increasing trend in total nitrogen concentration. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. There is a significant decreasing trend in pH. Recreational uses are fully supported at this site and a significant

decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. *Fish tissue samples from Fishing Creek Reservoir indicate no advisories are needed at this time.*

Cedar Creek Reservoir - There are six SCDHEC monitoring sites along Cedar Creek Reservoir. At the furthest uplake site (**CW-174**), aquatic life uses are not supported due to dissolved oxygen, total phosphorus, and total nitrogen excursions. There is a significant decreasing trend in pH. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions. Aquatic life uses are not supported further downlake (**RL-02319**) due to total phosphorus excursions. Recreational uses are fully supported at this site. Aquatic life uses are not supported at **RL-01007** due to chlorophyll-*a* and dissolved oxygen excursions. Recreational uses are fully supported at this site.

At the next site downlake (**RL-02452**), aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported at this site. Further downlake (**RL-01017**), aquatic life and recreational uses are fully supported. At the furthest downlake site (**CW-033**), aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported at this site. *Fish tissue samples from Cedar Creek Reservoir indicate no advisories are needed at this time.*

NPDES Program

Active NPDES Facilities

RECEIVING STREAM FACILITY NAME PERMITTED FLOW @ PIPE (MGD)	NPDES# TYPE COMMENT
CATAWBA RIVER BOWATER, INC./COATED PAPER DIV. PIPE #: 001 (01A, 01B) FLOW: M/R	SC0001015 MAJOR INDUSTRIAL
CATAWBA RIVER GREENS OF ROCK HILL LLC PIPE #: 001, 002 FLOW: M/R	SC0001783 MAJOR INDUSTRIAL (HOECHST CELANESE)
CATAWBA RIVER SPRINGS INDUSTRIES/GRACE COMPLEX PIPE #: 001 (01A), 002 FLOW: M/R	SC0003255 MAJOR INDUSTRIAL
CATAWBA RIVER CITY OF ROCK HILL/MANCHESTER CREEK PLT PIPE #: 001 FLOW: 20.0	SC0020443 MAJOR DOMESTIC
CATAWBA RIVER TOWN OF FT. MILL WWTP PIPE #: 001 FLOW: 2.0 PIPE #: 001 FLOW: 3.0 (PROPOSED)	SC0020371 MAJOR DOMESTIC
CATAWBA RIVER CITY OF LANCASTER/MAIN PLANT PIPE #: 001 FLOW: 7.5	SC0046892 MAJOR DOMESTIC
CATAWBA RIVER LANCASTER COUNTY P&D/FOSTER PLT PIPE #: 001 FLOW: M/R	SC0027391 MINOR INDUSTRIAL

CATAWBA RIVER LANCASTER COUNTY/INDIANLAND WWTP PIPE #: 001 FLOW: 4.0	SC0047864 MAJOR DOMESTIC
CATAWBA RIVER NATION FORD CHEMICAL CO. (R-M INDUSTRIES) PIPE #: 01A FLOW: M/R	SC0035360 MINOR INDUSTRIAL
CATAWBA RIVER LANCASTER COUNTY/CATAWBA RIVER WTP PIPE #: 001 FLOW: 0.698	SCG641013 MINOR DOMESTIC
CATAWBA RIVER CITY OF ROCK HILL WTP PIPE #: 001 FLOW: 0.698	SCG645008 MINOR DOMESTIC
CATAWBA RIVER CHESTER METRO/FT LAWN WTP PIPE #: 001 FLOW: 0.698	SCG641008 MINOR DOMESTIC
CATAWBA RIVER (CEDAR CREEK RES.) TOWN OF GREAT FALLS/WWTP PIPE #: 001 FLOW: 1.4	SC0021211 MAJOR DOMESTIC
CATAWBA RIVER TRIBUTARY INCHEM CORP. PIPE #: 001 FLOW: M/R	SCG250111 MINOR INDUSTRIAL
CATAWBA RIVER TRIBUTARY SPRINGS INDUSTRIES/FT LAWN COMPLEX PIPE #: 001, 002, 003 FLOW: 0.011	SCG250137 MINOR INDUSTRIAL
BIG DUTCHMAN CREEK PIEDMONT WATER CO./WOODFOREST SD PIPE #: 001 FLOW: 0.039	SC0035661 MINOR DOMESTIC
MANCHESTER CREEK INLAND PAPERBOARD & PACKAGING PIPE #: 001 FLOW: 0.024	SCG250142 MINOR INDUSTRIAL
BURGIS CREEK TRIBUTARY QUAIL MEADOW PARK PIPE #: 001 FLOW: 0.025	SC0028622 MINOR DOMESTIC
BARBER CREEK UTILITIES OF SC/SHANDON SD PIPE #: 001 FLOW: 0.014	SC0027189 MINOR DOMESTIC
ABERNATHY CREEK CEDAR VALLEY MHP PIPE #: 001 FLOW: 0.03	SC0032417 MINOR DOMESTIC
FISHING CREEK RESERVOIR REPUBLIC FASTENER PRODUCTS PIPE #: 001 FLOW: M/R	SC0029572 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

<i>LANDFILL NAME</i>	<i>PERMIT #</i>
<i>FACILITY TYPE</i>	<i>STATUS</i>
TOWN OF GREAT FALLS CONSTRUCTION	121002-1201 (121002-1701, CLOSED CWP-012, DWP-903)
HOECHST CELANESE CORP. INDUSTRIAL	463312-1601 (IWP-138) ACTIVE
BOWATER, INC. INDUSTRIAL	463318-1601 (IWP-141, IWP-127) ACTIVE
LANDFILL INC. INDUSTRIAL	IWP-105 -----

Mining Activities

<i>MINING COMPANY</i>	<i>PERMIT #</i>
<i>MINE NAME</i>	<i>MINERAL</i>
BORAL BRICKS, INC. FAILE MINE	0778-57 CLAY
DEESE HAULING & GRADING JJL & N PIT	1221-91 SAND
LCI-LINEBERGER CONSTRUCTION, INC. BORROW PIT – HWY #5	1201-57 SAND
CORNERSTONE DEVELOPMENT I-77 MINE SITE	1292-91 SAND
BRYANT NORMAN BRYANT DIRT MINE	1425-91 SAND

Growth Potential

Portions of the cities of Rock Hill and Fort Mill are included in the upper portion of the watershed, and are relatively densely developed. On the Fort Mill side of the Catawba River, there is a relatively wide floodplain, which will limit development adjacent to the river. Water and sewer service is available to most of the area on this side of the river, which includes a large portion of the Town of Fort Mill and the residential area west of the town. Potential growth areas include expansion around Fort Mill and the commercial and industrial development around the I-77/S.C. Hwy. 160 interchange. On the Rock Hill side of the river, there is extensive residential development in the city and to the north, with other developed residential areas to the east in the Friendship and Lesslie communities. Industrial areas have developed to the east of Rock Hill, and the large Bowater paper mill complex is located to the south. Extension of a water line from Rock Hill to the Bowater Facility has been completed, and will provide opportunities for higher density development in the area.

Portions of the Towns of Fort Lawn and Great Falls are located in the lower portion of this watershed. There is a concentrated area of industrial development along S.C. Hwy. 9 between Fort Lawn and the City of Lancaster, and there is a limited residential development along the shoreline of Fishing Creek. There is public water and sewer service in the Towns of Fort Lawn and Great Falls and water along S.C. Hwy. 9 and portions of U.S. Hwy. 21, but growth prospects are limited.

Lancaster County plans to develop a large mixed-use community along Fishing Creek Reservoir. The development named Catawba Ridge would extend from S.C. Hwy. 9 down to S.C. Hwy. 200, within the County. The intention of the development company is to create a 16,000 home, densely populated residential area that would include commercial and industrial uses. To date, some residential developers have purchased acreage in the development with some limited housing construction underway. Sun City Carolina Lakes is another large residential community that is underway on the Lancaster County side of the Catawba River near the confluence with Sugar Creek.

Several additional factors will influence future development in the watershed. The presence of I-77 provides excellent access to the Charlotte urban area, encouraging residential, industrial, distribution, and commercial development. The proposed Dave Lyle Boulevard Extension will be built across the watershed and into Lancaster County, opening up large areas with good access to Rock Hill and I-77. Rock Hill's Waterford area will continue to expand its existing office, manufacturing, distribution, and residential uses. The Catawba Indian Nation is continuing economic development along the river and its property. The many development factors, the presence of Rock Hill and Fort Mill and the presence of I-77 with five interchanges in this watershed all point to continued growth over the next few years.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for *Hidden Creek* water quality monitoring site CW-221 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary source of fecal coliform to the stream was determined to be runoff from urban areas in the watershed. The TMDL states that a 19% reduction in fecal coliform loading from urban sources is necessary for the stream to meet the recreational use standard.

A TMDL was also developed by SCDHEC and approved by EPA for *Cedar Creek Reservoir* water quality monitoring site CW-174 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. The primary sources of fecal coliform to the stream were determined to be runoff from urban and agricultural areas in the watershed, including failing septic systems, leaking and overflowing sanitary sewers, and cattle-in-streams. The TMDL states that an 83% reduction in fecal coliform loading from urban and agricultural sources is necessary for the stream to meet the recreational use standard. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at <http://www.scdhec.gov/water> and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Projects

TMDL Implementation for Hidden Creek

The Fecal Coliform Reduction Project for the unnamed Catawba River tributary, lead by the City of Rock Hill, was developed to meet the 19% reduction of fecal coliform bacteria in the creek as required by the TMDL. The tributary's watershed is characterized in the 1999 DHEC TMDL document as “developed residential and commercial” and is served by sanitary sewer. The document states that nonpoint sources are believed to be the source of fecal coliform bacteria in this watershed.

The project consists of three primary components to be implemented within the drainage area as follows: 1) an illicit discharge identification project, 2) the design and construction of stormwater run-off treatment BMPs, and 3) a public education/participation program. The proposed project includes an illicit discharge identification project throughout the drainage area; fecal coliform storm water data collection during two (2) storm events with samples collected in the tributary, its side streams, and from commercial parking lots; selection, design and construction of stormwater run-off treatment Best Management Practices (BMPs) within commercial parking lots; and a public education/participation program focused on residential pet waste management.

The "Unnamed Tributary" will be given an official name and visibly placarded to promote and maintain public awareness. The stream was named ***Hidden Creek***. Progress and results of all project components will be documented in an interim report and a final report.

TMDL Implementation for the Catawba River (Cedar Creek Reservoir) at Great Falls, S.C.

Waters in the targeted areas violated the state water quality standard for fecal coliform bacteria, and were placed on the 303(d) list. A TMDL was then developed. The goal of the cooperating partners for this project (Research Planning, Inc., and Clemson Extension Service) is to implement the TMDL using Best Management Practices (BMPs) on agricultural and rural sites. Since the project commenced in early 2004, three agricultural landowners have decided to participate in the cost-sharing program, and six additional landowners are considering participation. As of October 2004, BMPs installed and/or in progress include: a feeding shed where manure will be collected and stored properly, a composter/waste storage facility, water lines to additional troughs, 2.5 acres of riparian herbaceous cover planted, 2885 ft. of fencing (for stream protection), 7 tons of crusher run in heavy use areas, and a solar powered well. Outreach activities that have been implemented include a Home-A-Syst workshop led by Clemson Extension. Septic tank system owners (members of approximately 15 households in attendance) were made aware of potential impacts from leaking/overflowing septic systems in need of repair. A tour of farms where BMPs that were implemented under a previous §319 funded project were showcased. The farm tour was very successful, with over 60 farmers participating. Interest in the cost-sharing aspects of the program for Rocky Creek rose after the tour.

Catawba Wateree FERC Re-licensing

The Federal Energy Regulatory Commission (FERC) is the agency that licenses, inspects, and oversees environmental matters related to most hydroelectric (hydro) projects. FERC licenses, which regulate the design and operation of those projects, are issued for a term of 30 to 50 years. The

relicensing process typically begins 5 years before the current license expiration date and involves the applicant providing information to state and federal resource and regulatory agencies, as well as other interested parties. During traditional licensing process, environmental issues such as water quality, minimum flow releases from dams and endangered species are addressed by states through §401 certifications required prior to new licenses being issued. In the Catawba watershed, Duke Power operates 13 hydro facilities and 11 reservoirs on the Catawba River in North and South Carolina. Seven of these facilities and 5 reservoirs are located in South Carolina, including **Fishing Creek Reservoir, Great Falls Reservoir and Cedar Creek Reservoir**. All these facilities are regulated through a single license, which expires in 2008. Duke Power has initiated a “hybrid” relicensing process, which includes a collaborative process involving stakeholder negotiations, in addition to the traditional process. The Department is actively participating in the collaborative process as well as the traditional process, and Duke will apply for §401 Certification in 2006. More information about Catawba Wateree FERC relicensing can be found on the Duke Power website at: <http://www.catawbahydrolicensing.com/>.

NPS Assessment and TMDL for Phosphorus in the Catawba River Basin

In June 2003, researchers at the University of South Carolina completed a \$319-funded study of nutrient loading in the lower Catawba River basin using the WARMF (Watershed Analysis Risk Management Framework) water quality model. The model estimated that the lower Catawba (defined as the Catawba River downstream of the Lake Wylie dam and all tributaries through Lake Wateree) received an average load of 2100 kg/day of phosphorus for the 1996-1998 study period. Of this load, 46% was from point sources, 39% was from nonpoint sources, and 15% was from Lake Wylie. SCDHEC is currently using the WARMF model, which is being updated through 2003, to further refine nonpoint sources, to determine loading rates that would allow the reservoirs to meet the phosphorus standard (TMDLs), and to calculate wasteload allocations for phosphorus for the impaired reservoirs. Cooperators in the study include Catawba River stakeholders, North Carolina DWQ, and EPA Region 4.

Sustainable Environment for Quality of Life

Sustainable Environment for Quality of Life (SEQL) is a USEPA program, which addresses regional environmental planning through the Centralina Council of Governments and the Catawba Regional Council of Governments. SEQL is intended to assist local governments in the 15-county Charlotte/Gastonia/Rock Hill region to work together to promote economic growth while protecting the environment. Multiple air and water quality issues are analyzed simultaneously, while addressing transportation, water, land use, energy use, population growth and economic development. The Department has supported the program by providing air and water quality information. More information about SEQL is available at the following website: <http://centralina.org/seql/background.htm>